SOME CLAMPLESS SPECIES OF *CLITOCYBE*

by H.E. BIGELOW*

SUMMARY. – Six species, found in the United States, of small Clitocybes without clamp connections on hyphae of the basidiocarp and on the base of basidia, are studied. Five of them which are new : *C. borealis, C. adustiterricola, C. payettensis, C. hesleri* and *C. solumophila*, are described.

RÉSUMÉ. Étude de six espèces nord-américaines de petits Clitocybes sans boucles, tant aux cloisons des hyphes qu'au pied des basides, et description de cinq d'entre elles reconnues comme nouvelles: *C. borealis, C. adustiterricola, C. payettensis, C. hesleri* et *C. solumophila*.

This contribution treats some small Clitocybes, found in the United States, which do not have clamp connections on hyphae of the basidiocarp as well as the bases of basidia. In my opinion such species are part of a reduced series which belong to subgenus *Pseudolyophyllum*, section *Omphalinae*. They are treated by SINGER (1975) in *Omphalina*, section *Defibulatae*, which includes *O. rustica* (Fries) Quélet sens. Bresadola, *O. oreades* Singer (*Clitocybe albimontana* Bigelow), *O. defibulata* Singer, and *O. telmatiaea* (Berkeley and Cooke) Dennis. The last taxon does not belong to this group though, as my examination of the type material (G. MASSEE, Scarsboro. 10 August 1882, NY) did reveal the presence of clamp connections on hyphae of the pileus. An additional species without clamps has been described often from Europe under *O. grisella* (Weinman) Karsten, *O. velutina* (Quélet) Quélet, or *O. pseudoandrosacea* (St. Amans) Moser. Also, *O. subalpina* Horak has been described, but the spores are finely roughened at times and cystidia are present. *Omphalina atrovelutina* Romagnesi has small spores, 3,5-4,2 x 3,5-3,7μm, and intracellular pigment in the cutis hyphae of the pileus.

The colors noted in parentheses are from RIDGWAY (1912).

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CRYPTOGAMIE, MYCOLOGIE *(Cryptog., Mycol.)*, TOME 4 (1983).

Clitocybe borealis **Bigelow, sp. nov.**

Pileus 5-10 mm latus, convexus demum planus, subdepressus, margine subsulcatus, haud striatus, fibrillosus vel discus squamosus, impolitus, subhygrophanus, fuscus tum griseo-ochraceus. Lamellae decurrentes, subdistantes vel distantes, latae, bubalinae vel albidae. Stipes 10-12 mm longus, 1 mm crassus, aequalis, solidus, pruinosus, brunneus. Sporae 6-8,5 x 4-5µm. Caulocystidia pigmentae encrustatae. Hyphae defibulatae.

Holotypus legit V. WELLS *et* P. KEMPTON, n. 2298; Eklutna Lake, Alaska; 13 July 1966 (MICH).

Pileus 5-10 mm broad, convex with an incurved margin, becoming broadly convex and shallowly depressed, margin subsulcate but not pellucid striate, surface unpolished, dry, margin radially appressed fibrillose, disc subscaly or scaly, medium gray brown but drying to dull gray ochre; context light grayish tan, thin (0,5-1 mm at disc).

Odor not distinctive.

Lamellae decurrent, subdistant to distant, broad (1,5-2 mm), slightly intervenose, pale tan to nearly white, slightly darker in age.

Stipe 10-12 mm long, apex 1 mm thick, equal, solid, surface dry, pallid pruinose, ground color light to medium brown.

Spores 6-8,5 x 4-5µm, mostly ellipsoid but at times ovoid or obovoid, smooth, inamyloid.

Basidia 1-, 2-, or 4-spored.

Pileus cutis homogeneous, dark brown in KOH, hyphae 1,5-11,5µm diam., cylindric to slightly inflated, with encrusted pigment.

Hymenophoral trama of interwoven hyphae, cylindric, 3-5,5µm diam, at times with encrusted pigments.

Clamp connections absent.

Caulocystidia brown in KOH, end cells 15-25µm long, 8-13µm broad, cylindric to subclavate, with encrusted pigment, usually in fascicles.

Gregarious. On clay soil at road edge.

The distinguishing characters from other clampless species are : a nonstriate pileus when moist, the scaly disc at least when faded, and particularly the brown caulocysts with encrusted hyphae. *Clitocybe albimontana*, as well as others lacking clamps but having pubescent stipes, have smooth hyaline caulocysts. The caulocysts of *C. borealis* are not merely recurved surface hyphae as these caulocysts often are in fascicles with enlarged terminal cells.

Clitocybe albimontana **Bigelow**, *Rhodora* 68 : 178. 1966.

The type of this species (*Omphalina oreades* Singer, Pap. Michigan Acad. Sci., Arts & Letters 32 : 123. 1946), deposited at the Farlow Herbarium, Harvard University (FH), was discovered on Mt. Washington, White Mountains National Forest, New Hampshire. Later, Dr. Margaret Barr BIGELOW and I

found more specimens on two sites at about 1800 m, and an additional description was published with a transfer to *Clitocybe*. From the research of others, I became aware of lichenized agarics and reexamined these specimens to find that *Botrydina* was indeed present on the substrate at the base of stipes. Another collection made in 1954 at Snow Lake, Mount Rainier National Park, Washington, by Dr. A.H. SMITH (BIGELOW n. 2159, MICH) also has been identified as *C. albimontana*. It too possessed a small quantity of *Botrydina* on the moss surrounding the stipe base. The basidia of these specimens were two spored rather than four spored, otherwise the macroscopic description was the same as the Mt. Washington specimens.

With similar habitats, the absence of clamp connections, the presence of caulocystidia, in *Clitocybe albimontana* and the European *Omphalina velutina* (*O. grisella*, *O. pseudoandrosacea*), naturally a comparison of all characters was provoked. On present evidence I have concluded that though closely related *C. albimontana* is not identical because of a color difference. *Agaricus umbelliferus* var. *grisellus* Weinman is described originally as having a *«fuligineo-griseus»* pileus and stipe concolorous with lamellae which are *«albofuligineus»*. Thus, *O. grisellus* has a brownish gray pileus and stipe unlike the dark brown found in *C. albimontana*. *Omphalina velutina* is described as having a pileus which is «gris chamois», again not the color of *C. albimontana*. *Omphalina defibulata*, described by Dr. SINGER from Tierra del Fuego, also has a number of characters in common with *C. albimontana*, but spores are 6,7-7µm long in contrast to those of 7.5-10µm long known for *C. albimontana*. Whether or not *Botrydina* occurs with *O. defibulata* was not reported, and I have not studied the type specimens.

Clitocybe adustiterricola **Bigelow, sp. nov.**

Pileus 5-10 mm latus, planus, interdum subdepressus, margine striatus, interdum undulatus, glaber, murinus, striae et discus atrobrunneus. Lamellae decurrentes, distantes, latae, cinereae vel cum pileus concolores. Stipes 1-2 cm longus, ± 1 mm crassus, attenuatus deorsum, glaber, aquaticus et fragilis, cum pileo concolor vel fusco-murinus. Sporae 7,5-8,5 x 3,5-5µm. Hyphae defibulatae.

Holotypus legit A.H. SMITH, n. 3610; Booth, Oregon; 24 November 1935 (MICH).

Pileus 5-10 mm broad, plane with the margin decurved at first, becoming horizontal in age, wavy at times, entire, striate, disc slightly depressed at times, surface moist, glabrous, grayish brown («buffy brown»), with darker striations and disc (near «clove brown»); context very soft and fragile.

Lamellae long decurrent, distant, rather broad, pale gray then concolorous with pileus in age.

Stipe 1-2 cm long, ± 1 mm thick, apex enlarged and tapering downward, surface glabrous, watery fragile, concolorous with pileus or darker.

Spores 7,5-8,5 x 3.5-5µm, ellipsoid or sometimes ellipsoid-oblong, smooth, inamyloid.

Basidia 19-27 x 5.5-7μm, 4-spored.

Pileus cutis dark brown in KOH, hyphae cylindric, 2.5-4μm diam., with spirally encrusted pigment.

Context light brown in KOH, hyphae cylindric to somewhat inflated, 6.5-11μm diam., smooth and hyaline or encrusted.

Hymenophoral trama of undulate-subparallel hyphae, cylindric, 3-4.5μm diam. encrusted or smooth.

Clamp connections absent.

Gregarious. On burned earth.

This species is distinctive from others in the group by combination of the colors with a glabrous stipe, lamellae from gray to brown, and the occurrence on burned earth.

Clitocybe payettensis **Bigelow, sp. nov.**

Pileus 5-12 mm latus, plano-convexus vel planus, interdum turbinatus, demum subdepressus, glaber, hygrophanus vel subhygrophanus, avellaneus, striae atroavellaneae, demum pallescens et opacus, margo laceratus; caro mollis, angustissimae. Lamellae decurrentes, latae, distantes, avellaneae vel vinaceo-alutaceae. Stipes 1,5-3 cm longus, circa 1 mm crassus, aequalis, fragilis, glaber, atroavellaneus. Sporae 8-11,5 x 4-6μm. Basidia bisporae. Hyphae defibulatae.

Holotypus legit A.H. SMITH n. 44296; Payette Lake, near McCall, Valley Co., Idaho; 28 June 1954 (MICH).

Pileus 5-12 mm broad, plano-convex or plane, disc slightly depressed in age, shape sometimes turbinate, surface glabrous, hygrophanous or subhygrophanous, avellaneous when moist and with slightly darker striations, paler when faded or remaining avellaneous, opaque, at times slightly sulcate along margin, splitting readily; context very thin and soft, grayish.

Odor and taste not distinctive.

Lamellae decurrent, broad, distant, avellaneous to near vinaceous buff.

Stipe 1.5-3 cm long, ± 1 mm thick, equal, fragile, glabrous, darker than the pileus and lamellae (i. e., «wood brown»).

Spores 8-11,5 x 4-6μm, shape variable : ellipsoid or sometimes narrowly ovoid or obovoid, in profile sometimes lacrymoid or bent or inequilateral, smooth, inamyloid.

Basidia 18,5-26,5 x 4.5-5.5μm . 2-spored.

Pileus cutis pale fuligineous in KOH, hyphae cylindric, 1.5-4μm diam., smooth or with encrusted pigment.

Context hyaline, hyphae 5-10μm diam., cylindric or inflated, smooth.

Clamp connections absent.

Gregarious. On moss and algae on wet rocks.

Only two-spored basidia are known for this species, and initially I thought that the collection might be only a form of another species which had four-

spored basidia and clamp connections. However, my examination of other North American collections of this section has not revealed such a species, nor am I convinced that a four-spored representative has been described from other regions. The pale colors of pileus and stipe, and the absence of caulocystidia form the distinguishing set of features from other clampless species.

Clitocybe hesleri Bigelow, sp. nov.

Pileus 6-15 mm latus, convexus vel campanulatus, striatus, depressus, glaber, hygrophanus, murinus vel fuscus, demum pallido-murinus. Lamellae adnatae ad decurrentes, confertae vel subdistantes, latae, cinereae, fuscescens. Stipes 1,5-2 cm longus, 1-1,5 mm crassus, aequalis, glaber, fumoso-brunneus. Sporae 7-9 x 3-4µm. Hyphae defibulatae.

Holotypus legit L.R. HESLER, n. 8084; Roan Mountain, Mitchell Co., North Carolina; 20 July 1935 (TENN).

Pileus 6-15 mm broad, convex or campanulate, margin incurved at first, striate, disc deeply depressed, surface glabrous, hygrophanous, brownish gray to soot color («drab» to «fuscous»), paler and opaque when faded; context thin, brownish gray («drab»).

Odor and taste mild.

Lamellae adnate to decurrent, close or nearly subdistant, moderately broad, grayish, darkening to pale fuscous.

Stipe 1,5-2 cm long, apex 1-1,5 mm thick, equal, surface glabrous, smoky brown, base with white mycelium.

Spores 7-9 x 3-4µm, ellipsoid to nearly cylindrical or subfusiform in face view, often inequilateral in profile, smooth, inamyloid.

Basidia 27-31 x 5,5-8µm, 1-, 2-, 3- or 4-spored, sterigmata up to 6µm long.

Pileus cutis brownish in KOH, hyphae cylindric, 3-8,5µm diam., with very finely encrusted pigment.

Context hyaline in KOH, hyphae cylindric, 2,5-5,5µm.

Hymenophoral trama hyaline, of undulate-subparallel hyphae, cylindric, 2,5-4,5µm diam.

Clamp connections absent.

Gregarious. On soil and decayed wood in mixed woods.

The brownish gray to blackish pileus and close lamellae are departures from others described without clamp connections as is the woodland site where the collection was found. Whether or not the species is truly lignicolous is not known. The variation in spore shape is perhaps notable too, but it was not possible to associate any particular shape with any special number of sterigmata on the basidia.

Clitocybe solumophila Bigelow, sp. nov.

Pileus 8-12 mm latus, planus mox depressus, striatus, glaber, hygrophanus, cinnamomeus

demum cinereus vel avellaneus, discus fibrillosus. Lamellae adnatae vel decurrentes, latae, subdistantes, pallido-cinereae vel avellaneae. Stipes 2-3 cm longus, ± 1 mm crassus, aequalis, solidus, glaber vel apice pruinosus, cum pileo concolor. Sporae 5-7 x 3-4µm. Basidia tetrasporae. Hyphae defibulatae.

Holotypus legit A.H. SMITH, n. 8501; Siskiyou National Forest, California; 5 November 1937 (MICH).

Pileus 8-12 mm broad, plane at first but the disc soon depressed, margin incurved at first, broadly striate to disc, surface glabrous appearing moist, hygrophanous, brown («snuff brown»), fading to ash color (near «avellaneous»), minutely fibrillose on disc after fading; context thin, fragile, concolorous with pileus surface.

Odor and taste not distinctive.

Lamellae broadly adnate to decurrent, broad, subdistant, concolorous with faded pileus.

Stipe 2-3 cm long, ± 1 mm thick equal, solid, glabrous or the apex pruinose, concolorous with pileus, base with slight whitish tomentum in age.

Spores 5-7 x 3-4µm, ellipsoid to nearly ellipsoid-oblong, smooth, inamyloid.

Basidia 19-28 x 3,5-4,5µm, 4-spored.

Pileus : surface appearing subgelatinous in KOH.

Cutis orangish brown in KOH, hyphae 2-5µm diam., cylindric, with coarse encrustations.

Context hyphae 3-8µm diam., cylindric to slightly inflated, smooth or encrusted.

Hymenophoral trama of somewhat interwoven hyphae or undulate-subparallel hyphae, 2,5-7µm diam, mostly cylindric, smooth or encrusted.

Stipe hyphae 2,5-5µm diam., smooth, apex pruina consisting of short scattered caulocysts, clavate, 15-30µm long, 5-6µm diam.

Clamp connections absent.

Scattered or gregarious. On mossy soil.

The small spores of *C. solumophila* in combination with the colors of the basidiocarp and subgelatinous pileus cutis provide the distinguishing characters.

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